

WHAT IS CLAIMED IS:

1. A multimedia playback apparatus, comprising:  
a cache buffer that stores multimedia data, including video and audio data, read from a storage device;  
a cache manager that controls said cache buffer and that causes the storage device to enter into a reduced power consumption mode when said amount of data stored in said cache buffer reaches a first level; and  
a track buffer that stores a first amount of said multimedia data read from said cache buffer.
2. The multimedia playback apparatus as defined in Claim 1, further comprising:  
a demultiplex circuit that receives said multimedia data from said track buffer;  
a decode circuit that decodes said multimedia data received from said demultiplex circuit to produce decoded multimedia data; and  
a render circuit to render said decoded multimedia data.
3. The multimedia playback apparatus as defined in Claim 1, wherein said reduced power consumption mode idles said storage device.
4. The multimedia playback apparatus as defined in Claim 1, wherein said reduced power consumption mode spins down said storage device.
5. The multimedia playback apparatus as defined in Claim 1, wherein said cache manager is configured to cause said storage device to enter into a relatively higher power consumption mode when said amount of data stored in said cache buffer falls below a second level.
6. The multimedia playback apparatus as defined in Claim 1, wherein said cache buffer is comprised of volatile memory.
7. The multimedia playback apparatus as defined in Claim 1, further comprising said storage device.
8. The multimedia playback apparatus as defined in Claim 1, wherein said storage drive is an optical storage drive selected from a group including a DVD drive and a CD drive.
9. The multimedia playback apparatus as defined in Claim 1, wherein said storage drive is a digital tape recorder.

10. The multimedia playback apparatus as defined in Claim 1, further comprising a computer.

11. The multimedia playback apparatus as defined in Claim 1, further comprising an electronic consumer product, including at least one of a set-top box.

12. The multimedia playback apparatus as defined in Claim 1, wherein said cache manager is configured to retain an address mapping of a unit of data of said multimedia data that had been read into said cache buffer.

13. The multimedia playback apparatus as defined in Claim 1, wherein said cache buffer can be dynamically modified in size.

14. A method of controlling a multimedia storage device, the method comprising:  
storing multimedia data read from a storage drive into a multimedia cache;  
receiving a scan command; and  
transferring the corresponding multimedia data from the multimedia cache to a track buffer for rendering when said multimedia data corresponding to said scan command is stored in said multimedia cache.

15. The method as defined in Claim 14, wherein said scan command is one of a fast forward command and a fast reverse command.

16. The method as defined in Claim 14, further comprising:  
receiving a second scan command; and  
reading said multimedia data corresponding to said second scan command from said storage device if said multimedia data corresponding to the second scan command is not stored in the multimedia cache.

17. The method as defined in Claim 14, wherein sub-band data is stored in said multimedia cache in synchronization with said multimedia data.

18. The method as defined in Claim 14, wherein said corresponding multimedia data is transferred from said cache to said track buffer by modifying a pointer value.

19. A method of processing multimedia data, comprising:  
determining that a storage device is reading multimedia data;  
transferring a first quantity of multimedia data from said storage device to a media cache;

once said first quantity of said multimedia data is stored in said media cache, ceasing the transfer of said multimedia data from said storage device into said media cache and causing said storage device to enter into a power saving mode;

writing said multimedia data from said media cache to a track buffer for rendering; and

at least partly in response to the quantity of said multimedia data in stored in the media cache falling to a first threshold, causing said storage device to spin up.

20. The method as defined in Claim 19, wherein said multimedia data includes a plurality of views of at least one image stored in said media cache at the same time.

21. The method as defined in Claim 19, wherein said multimedia data is maintained in said media cache after said multimedia data is written to said track buffer so that a user can scan said multimedia data stored in said media cache after said multimedia data is read from said track buffer and rendered.

22. The method as defined in Claim 19, further comprising storing a DVD menu in said media cache during playback of a movie stored on said DVD so that said DVD menu can be accessed substantially simultaneously by a user.

23. The method as defined in Claim 19, further comprising simultaneously rendering a first portion of said multimedia data in a first window and a second portion of said multimedia data in a second window, wherein said first window and said second window are visible at the same time.

24. The method as defined in Claim 19, wherein said multimedia data stored in said media cache includes data from a plurality of non-contiguous DVD regions.

25. The method as defined in Claim 19, wherein said multimedia data includes menu data and video data stored in said media cache at the same time.

26. The method as defined in Claim 19, further comprising speculatively fetching data from said storage device and storing it in the media cache.

27. The method as defined in Claim 19, further comprising transferring said multimedia data from said media cache to said track buffer, wherein said media cache has a first set of associated pointers and said track buffer has a second set of associated pointers and wherein said first set of associated pointers and said second set of associated pointers are adjusted in performing said transferring.

28. The method as defined in Claim 19, further comprising:  
determining that said storage device is in the process of reading said multimedia data;  
subtracting a media cache current address pointer from a media cache end address pointer to produce a first difference value;  
comparing said first difference value to a predetermined value; and  
based at least upon said comparing, determining whether to stop transferring said multimedia data into said media cache.

29. The method as defined in Claim 19, wherein said storage device is accessed over a network.

30. The method as defined in Claim 19, further comprising:  
determining that said storage device has ceased reading said multimedia data;  
subtracting a media cache current address pointer from a media cache end address pointer to produce a first difference value;  
comparing said first difference value to a first threshold value; and  
based at least upon said comparing determining whether to start reading said multimedia data into said media cache.

31. The method as defined in Claim 19, further comprising storing read error information in synchronization with said multimedia data located in said media cache.

32. A method of processing multimedia data when a storage device is idle, comprising:

writing multimedia data from a cache buffer to a track buffer for rendering while said storage device is idle; and  
at least partly in response to a quantity of said multimedia data stored in said media cache falling to a first threshold, causing said storage device to spin up.

33. A multimedia apparatus, comprising:  
a cache buffer that stores multimedia data, including video and audio data; and  
a cache manager that manages said cache buffer, wherein said cache buffer is configured to cause a storage device to enter into a reduced power consumption mode

when the amount of said multimedia data stored in said cache buffer reaches a first level.

34. The multimedia apparatus as defined in Claim 33, further comprising a track buffer that stores a first amount of said multimedia data read from said cache buffer.

35. The multimedia apparatus as defined in Claim 33, wherein said reduced power consumption mode spins down said storage device.

36. The multimedia apparatus as defined in Claim 33, wherein said cache manager is configured to cause said storage device to enter into a relatively higher power consumption mode when the amount of said multimedia data stored in said cache buffer reaches a second level.

37. The multimedia apparatus as defined in Claim 33, further comprising:

- a start address pointer corresponding to a start of a media reading session stored in said cache buffer; and

- a current address pointer corresponding to a current unit of data that is transferred to a track buffer.

38. The multimedia apparatus as defined in Claim 33, wherein said first level is selected based in part on at least one of a storage device spin up time and a storage device seek operation.

39. The multimedia apparatus as defined in Claim 33, further comprising a visual display device, including at least one display device selected from a group comprising a television, an liquid crystal display, a plasma display, wherein the visual display device is coupled to the cache buffer and is configured to display images corresponding to said multimedia data in said cache buffer.

40. A multimedia apparatus, comprising:

- a write track buffer configured to store a first amount of multimedia data;

- a write cache buffer that caches said multimedia data from said write track buffer, wherein said write cache buffer is several times the size of said write track buffer, and wherein said write cache buffer stores said multimedia data intended to be written to a storage device; and

a cache manager that causes said storage device to enter into a reduced power consumption mode when the amount of said multimedia data stored in said cache buffer reaches a first level.

41. The multimedia apparatus as defined in Claim 40, further comprising:

an encoder circuit configured to encode multimedia data; and

a multiplex circuit that receives said encoded multimedia data from said encoder circuit, wherein said multiplex circuit is coupled to said write cache buffer.

42. The multimedia apparatus as defined in Claim 40, further comprising said storage device.

43. The multimedia apparatus as defined in Claim 40, wherein said reduced power consumption mode idles said storage device.

44. The multimedia apparatus as defined in Claim 40, wherein said reduced power consumption mode spins down said storage device.

45. The multimedia apparatus as defined in Claim 40, wherein said cache manager is configured to cause said storage device to enter into a relatively higher power consumption mode when the amount of said multimedia data stored in said write cache buffer rises above a second level.

46. The multimedia apparatus as defined in Claim 40, wherein said cache manager is configured to write said multimedia data from said write cache buffer to said storage device at a substantially constant speed when said multimedia data in said write cache buffer is above a second level.

47. The multimedia apparatus as defined in Claim 40, wherein said storage device is one of a DVD drive and a CD drive.

48. The multimedia apparatus as defined in Claim 40, further comprising a computer.

49. The multimedia apparatus as defined in Claim 40, further comprising at least one of a set-top box and other consumer electronic apparatus.

50. The multimedia apparatus as defined in Claim 40, wherein said write cache buffer can be dynamically modified in size.

51. The multimedia apparatus as defined in Claim 40, wherein said cache manager is configured to retain an address mapping of a unit of said multimedia data that had been read into said write cache buffer.

52. A method of processing media data to be written to a non-volatile storage device, comprising:

determining the quantity of media data stored in a cache buffer; and

when the quantity of media data stored in said cache buffer is at a first level, causing said non-volatile storage device to spin down.

53. The method of processing media data as defined in Claim 52, further comprising:

monitoring addresses associated with a unit of write data that is transferred from a track buffer to said cache buffer to thereby locate said write data that is to be written to said non-volatile storage device after a previously written unit of said write data; and

substantially immediately after locating said write data that is to be written after a previously written unit of said write data, causing said located write data to be written from said cache buffer to said non-volatile storage device.

54. The method as defined in Claim 52, wherein said cache manager provides for the substantially concurrent writing of multiple media streams to said storage device.

55. The method as defined in Claim 52, wherein said unit of write data is a sector of write data.

56. The method as defined in Claim 52, wherein said located data is to be written substantially sequentially after said previously written unit of said write data.